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10/612,660

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,660

Applicant(s)

CHEN ET AL.

Examiner

Michelle R. Connelly-Cushwa

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/03/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

The prior art documents submitted by applicant in the Information Disclosure Statement filed on November 3, 2003 have all been considered and made of record, except for the reference that has been lined-through on page 11 of the IDS (note the attached copy of form PTO-1449). A copy of the lined-through reference was not provided by Applicant.

While each reference has been considered within the time allotted for examination of this application, due to the excessive number of references cited by Applicant on this Information Disclosure Statement, Applicant is requested to identify the 20 most relevant references and the specific parts of these references that *relate to the claimed subject matter* (i.e. any reference that describes an optoelectronic element coupled to an optical fiber or other optical medium via two lenses) so that a more thorough review of this material may be timely performed by the Examiner.

Drawings

Seven (7) sheets of Figures were filed on May 23, 2005 and have been accepted by the Examiner.

Specification

Applicant's cooperation is requested in correcting any errors of which Applicant may become aware in the specification.

Claim Objections

Claim 11 is objected to because of the following informalities:

Regarding claim 11; the claim concludes with a semi-colon (;). The claim must conclude with a period (.).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25, 29 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 25, 29 and 33; the phrases "glass-like material" (see lines 2-3 of claim 25; line 2 of claim 29; and line 4 of claim 33) and "plastic-like material" (see line 5 of claim 25; lines 3-4 of claim 29; and lines 2-3 of claim 33) render the claims indefinite because the claims include elements not actually disclosed (those encompassed by "-like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

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351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 17, 18, 21-24, 26-28 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Gaebe (US 5,684,901).

Regarding claims 1 and 17 ; Gaebe discloses an optical coupler (see Figure 3) comprising:

- a spherical ball lens (32); and
- an aspherical lens (48);
- wherein the spherical ball lens and the aspherical lens are situated in the same optical path on a common optical axis.

Regarding claim 18; Gaebe discloses that the optical coupler is for coupling to an optical fiber (20; see Figures 1 and 2, the title of the patent, the abstract, and column 4, lines 4-31).

Regarding claims 21 and 22; Gaebe discloses an optical coupler (see Figure 3) comprising:

- a means (the spherical ball lens, 32) for spherically focusing light (11) from a light source (laser, 10);
- a means (the aspherical lens ,48) for aspherically focusing light from the means for spherically focusing light; and
- means for inputting light into an optical medium (an optical fiber; see column 4, lines 4-31) from the means for aspherically focusing light.

Regarding claim 23;

- the laser (10) is a vertical cavity surface emitting laser (see Figure 3; the cavity of the laser may be considered to be a vertical cavity and the laser emits light, 11, from a surface); and
- the fiber may be a single mode optical fiber (see column 1, lines 11-19).

Regarding claim 24; the means for spherically focusing light (32) conveys more light power than the means for aspherically focusing light (48).

Regarding claims 26 and 27; Gaebe discloses a method for coupling light (see Figures 1 and 3), comprising:

- spherically focusing light (11) from a light source (10) with a ball lens (12 in Figure 1; 32 in Figure 3) resulting in a first portion of light having a first focal point on an optical axis and a second portion of light having a second focal point on the optical axis (see Figure 1); and
- aspherically focusing the first portion of light and the second portion of light with an aspherically-shaped lens (48 in Figure 3) resulting in the first and second portion of light having a common focal point (see Figure 3).

Regarding claim 28; the common focal point is at a place of an optical medium (a fiber).

Regarding claim 32; Gaebe discloses an optical coupler (see Figure 3) comprising:

- an aspherical lens (48) on an optical axis;

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- a spherical lens (32) on an optical axis;
- an optoelectronic element (10); and
- an optical medium (an optical fiber);
- wherein both the aspherical lens and the spherical lens are considered to be proximate to both the optoelectronic element and the optical medium for optical coupling to occur between the optoelectronic element and the optical medium.

Claims 1, 17, 18, 21-24, 26-28 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Blasingame et al. (US 2004/0247242 A1).

Regarding claims 1 and 17 ; Blasingame et al. discloses an optical coupler (see Figures 3 and 6; paragraph [0029]; and claims 9 and 12-18 of Blasingame et al.) comprising:

- a spherical ball lens (25); and
- an aspherical lens (26);
- wherein the spherical ball lens and the aspherical lens are situated in the same optical path on a common optical axis.

Regarding claim 18; Blasingame et al. discloses that the optical coupler is for coupling to an optical fiber (33).

Regarding claims 21 and 22; Blasingame et al. discloses an optical coupler (see Figures 3 and 6) comprising:

- a means (the spherical ball lens, 25) for spherically focusing light (14) from a light source (laser, 11);

- a means (the aspherical lens ,26) for aspherically focusing light from the means for spherically focusing light; and
- means for inputting light into an optical medium (an optical fiber, 33) from the means for aspherically focusing light.

Regarding claim 23;

- the laser (11) is a vertical cavity surface emitting laser (see paragraph [0022]); and
- the fiber may be a single mode optical fiber (33; see paragraph [0026]).

Regarding claim 24; the means for spherically focusing light (25) conveys more light power than the means for aspherically focusing light (26).

Regarding claims 26 and 27; Blasingame et al. discloses a method for coupling light (see Figures 3 and 6), comprising:

- spherically focusing light (14) from a light source (11) with a ball lens (25) resulting in a first portion of light having a first focal point on an optical axis and a second portion of light having a second focal point on the optical axis; and
- aspherically focusing the first portion of light and the second portion of light with an aspherically-shaped lens (26) resulting in the first and second portion of light having a common focal point.

Regarding claim 28; the common focal point is at a place of an optical medium (33).

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Regarding claim 32; Gaebe discloses an optical coupler (see Figures 3 and 6) comprising:

- an aspherical lens (26) on an optical axis;
- a spherical lens (25) on an optical axis;
- an optoelectronic element (11); and
- an optical medium (an optical fiber, 33);
- wherein both the aspherical lens and the spherical lens are considered to be proximate to both the optoelectronic element and the optical medium for optical coupling to occur between the optoelectronic element and the optical medium.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4, 6, 8, 10-12, 19, 20, 25, 29-31 and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaebe (US 5,684,901).

Regarding claims 2-4, 11, 19, 20, 25, 29-31 and 33-37; Gaebe discloses all of the limitations of these claims as applied above, except for specifically stating that the spherical lens comprises a glass material or that the aspherical lens comprises a non-glass or plastic material.

Gaebe does not suggest that the lenses (32 and 48) are made of any particular material, thereby indicating a lack of criticality in the particular material forming the lenses.

Spherical and aspherical lenses are both known to be formed by either glass and/or plastic materials in the art. Plastic materials provide improved mechanical consistency, lower component manufacturing costs for complicated structures due to molding techniques that are employed in the art, and a reduction in weight, which can reduce additional costs associated with shipping and/or incorporating the elements (in this case lenses) in optical systems. Ball or spherical lenses are simple shapes that are easily made from glass materials, which exhibit well known standard properties, and advantageously have improved heat tolerances and offer higher refractive index values, when compared to plastics. It is noted that both glass spherical lenses and plastic aspherical lenses are well known, commonly used, and readily available in the art.

Therefore, one of ordinary skill in the art would have found it obvious to use a glass ball spherical lens in the invention of Gaebe and thereby provide a lens with well known standard properties, good heat tolerance, and a high refractive index, since such lenses are well known, commonly used, and readily available in the art. Additionally, one of ordinary skill in the art would have found it obvious to use a plastic aspheric lens in the invention of Gaebe and thereby provide a lens with a more complicated structure that has low manufacturing costs and reduced weight, since such lenses are well known, commonly used, and readily available in the art.

Regarding claim 6; the aspherical lens (48) is convex (see Figure 3).

Regarding claims 8 and 10; Applicant is claiming the product including the process of making the aspherical lens, and therefor claims 8 and 10 are of "product-by-process" nature. The courts have been holding for quite some time that: the determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made. *In re Thrope*, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus a prior art product which possesses the claimed product characteristics can anticipate or render obvious the claim subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. *In re Brown and Saffer*, 173 USPQ 685 and 688; *In re Pilkington*, 162 USPQ 147.

As such no weight is given to the process steps recited in claims 8 and 10.

Regarding claim 12; the light (11) from the light source (10) propagates through the spherical lens (32) and the aspherical lens (48), respectively.

Claims 2-4, 6, 8, 10-16, 19, 20, 25, 29-31 and 33-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blasingame et al. (US 2004/0247242 A1).

Regarding claims 2-4, 11, 19, 20, 25, 29-31 and 33-37; Blasingame et al. discloses all of the limitations of these claims as applied above, except for specifically

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stating that the aspherical lens comprises a non-glass or plastic material. Blasingame et al. discloses that the spherical ball lens (25) is made of glass (see paragraph [0018]).

Blasingame et al. does not suggest that the aspherical lens (26; See Figures 3 and 6) is made of any particular material, thereby indicating a lack of criticality in the particular material forming the lens.

Aspherical lenses are known to be formed of plastic materials in the art. Plastic materials provide improved mechanical consistency, lower component manufacturing costs for complicated structures due to molding techniques that are employed in the art, and a reduction in weight, which can reduce additional costs associated with shipping and/or incorporating the elements (in this case lenses) in optical systems. It is noted that plastic aspherical lenses are well known, commonly used, and readily available in the art.

Thus, one of ordinary skill in the art would have found it obvious to use a plastic aspheric lens in the invention of Blasingame et al. and thereby provide a lens with a more complicated structure that has low manufacturing costs and reduced weight, since such lenses are well known, commonly used, and readily available in the art.

Regarding claim 6; the aspherical lens (26) is convex (see Figures 3 and 6).

Regarding claims 8 and 10; Applicant is claiming the product including the process of making the aspherical lens, and therefor claims 8 and 10 are of "product-by-process" nature. The courts have been holding for quite some time that: the determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made. *In re Thrope*, 777 F. 2d

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695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus a prior art product which possesses the claimed product characteristics can anticipate or render obvious the claim subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. *In re Brown and Saffer*, 173 USPQ 685 and 688; *In re Pilkington*, 162 USPQ 147.

As such no weight is given to the process steps recited in claims 8 and 10.

Regarding claim 12; the light (14) from the light source (11) propagates through the spherical lens (25) and the aspherical lens (26), respectively.

Regarding claim 13; a window (13; see Figure 6) is situated between the light source (11) and the spherical lens (25).

Regarding claim 14; the optical medium is an optical fiber (33).

Regarding claim 15; the light source is a VCSEL (see paragraph [0022] and claim 29 of Blasingame et al.).

Regarding claim 16; the optical fiber may be single mode (see paragraph [0026]).

Regarding claim 38; the optoelectronic element may be a detector (see the abstract) and the optical medium is an optical fiber (33).

Regarding claims 39 and 40; the fiber may be single mode or multimode (see paragraph [0026]).

Claims 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaebe (US 5,684,901) in view of Melles Griot ("The Practical Application of Light").

Regarding claim 5; Gaebe teaches or suggests all of the limitations of claim 5 as applied above, except for the aspherical lens being concave.

Melles Griot discloses aspheric condenser lens on page 6.34, where an aspheric lens having a concave surface is illustrated and it is taught that the concave surface aspheric lenses offer more clearance from the light source. Therefore, one of ordinary skill in the art would have found it obvious to use a known alternative to the aspheric lens disclosed by Gaebe by replacing that lens with an aspheric lens having a concave surface in order to provide more clearance from the light source.

Regarding claims 7 and 9; Applicant is claiming the product including the process of making the aspherical lens, and therefor claims 7 and 9 are of "product-by-process" nature. The courts have been holding for quite some time that: the determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made. *In re Thrope*, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus a prior art product which possesses the claimed product characteristics can anticipate or render obvious the claim subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or

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alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. *In re Brown and Saffer*, 173 USPQ 685 and 688; *In re Pilkington*, 162 USPQ 147.

As such no weight is given to the process steps recited in claims 7 and 9.

Claims 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blasingame et al. (US 2004/0247242 A1) in view of Melles Griot ("The Practical Application of Light").

Regarding claim 5; Blasingame et al. teaches or suggests all of the limitations of claim 5 as applied above, except for the aspherical lens being concave. Blasingame et al. does suggest that modifications, including aspheric lens variations (see paragraph [0029]) are within the level of ordinary skill in the art.

Melles Griot discloses aspheric condenser lens on page 6.34, where an aspheric lens having a concave surface is illustrated and it is taught that the concave surface aspheric lenses offer more clearance from the light source. Therefore, one of ordinary skill in the art would have found it obvious to vary the aspheric lens (26) disclosed by Blasingame et al. by replacing that lens with an aspheric lens having a concave surface in order to provide more clearance from the light source.

Regarding claims 7 and 9; Applicant is claiming the product including the process of making the aspherical lens, and therefor claims 7 and 9 are of "product-by-process" nature. The courts have been holding for quite some time that: the determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made. *In re Thrope*, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of claim to a product does not rest merely on a

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difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus a prior art product which possesses the claimed product characteristics can anticipate or render obvious the claim subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. *In re Brown and Saffer*, 173 USPQ 685 and 688; *In re Pilkington*, 162 USPQ 147.

As such no weight is given to the process steps recited in claims 7 and 9.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Shimada et al. (US 2002/0162338 A1) ; Ishimaru (US 6,568,864 B1) ; Kimura et al. (US 6,618,405 B2); and Koyanagi et al. (US 6,010,251) each disclose optical coupling systems including two lenses that couple light from an optoelectronic component to an optical fiber.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.


Michelle R. Connelly-Cushwa
Patent Examiner
February 21, 2006